THE VALIDITY OF *ANTHOTHOE CHILENSIS* (ACTINIARIA, SAGARTIIDAE) AND ITS DISTRIBUTION IN SOUTHERN HEMISPHERE

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ABSTRACT

Anthothoe chilensis (Lesson, 1830) is redescribed based on specimens collected from the intertidal of Rio de Janeiro (Brazil) and Mar del Plata (Argentina). The geographic distribution is amplified to the Southwest Atlantic Ocean. The type species of the genus, *A. stimpsoni* (Verrill, 1870) is considered a junior subjective synonym of *A. chilensis*.

KEYWORDS. Sagartiidae, *Anthothoe chilensis*, redescription, distribution, synonymy.

INTRODUCTION

CARLGREN (1949) listed four species: *Anthothoe stimpsoni* (Verrill, 1870), *A. australiensis* Carlgren, 1949, *A. vagrans* (Stuckey, 1909) and *A. panamensis* Carlgren, 1949, in the genus *Anthothoe* Carlgren, 1938. *A. panamensis* should be considered as "species inquirenda", since CARLGREN (1951: 433) identified doubtfully two specimens from the Gulf of California as "*A. panamensis* (Verrill)".

CARLGREN (1950a, 1959) transferred *Actinothoe albocincta* Hutton, 1878 and *Actinothoe chilensis* Lesson, 1830, respectively, to the genus *Anthothoe*. The genus is considered as endemic to the Southern Hemisphere.

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This paper deals with the redescription of *A. chilensis* (Lesson, 1830), which was currently known as endemic to the Chilean coast (CARTER, 1965; SEBENS & PAINE, 1978). Based on material collected from Rio de Janeiro (Brazil) and Mar del Plata (Argentina), its geographical distribution is amplified to the Southwestern Atlantic Ocean. The type species of the genus, *A. stimpsoni* (Verrill, 1870) is considered a junior subjective synonym of *A. chilensis*.

MATERIAL AND METHODS

Studied specimens of *Anthothoe chilensis*, collected by hand during lowest tide periods at the intertidal of Arraial do Cabo and Rio de Janeiro, RJ, Brazil (23°S, 43°W) and at the coast of Mar del Plata, Argentina (38°05'S, 57°32'W) were deposited in the Museu Nacional, Universidade Federal do Rio de Janeiro, (MNRJ) and the Departamento de Ciencias Marinas (UNMP) Mar del Plata.

The specimens were anaesthetized by mentol cristals or magnesium chloride solution and fixed in 5 and 10% formalin in sea water, except those used for histological preparation, which were refixed in Heidenhain's Susa. Histological sections were stained with Gomori's Trichromic Stain and Mallory's Triple Stain (PANTIN, 1948). Photographs were taken from slides stained with Gomori's Stain.

Colours of living specimens from Rio de Janeiro (Brazil) were recorded (when this was possible) according to SÈGUY (1936) and are expressed parenthetical. Cnidae were identified and drawn from live and preserved specimens according SCHMIDT (1969, 1972). Data on cnidae include the number of capsules measured (n) and the ratio of the number of individuals in which a particular type of cnidae was found to the total number examined for that tissue (N) (DUNN, 1983). Measurements were taken with a squared micrometer eye piece and expressed in micrometers.

In "Material examined", the number of studied specimens are expressed parenthetical. For comparison with the studied material, one specimen of *A. stimpsoni* belonging to the South African Museum, (SAM, Cape Town, identified by L. Hoenson) and two specimens of *A. albocincta* Hutton, 1878 from New Zealand (Port Chalmers, E.J. Batham col., indentified by Cutress) of the NMNH Collection, (Smithsonian Institution, Washington), MNRJ 1805 (NMNH 51664), were used.

Anthothoe Carlgren, 1938

Anthothoe CARLGREN, 1938: 85-86.

Type species: *Cereus stimpsoni* Verrill, 1870, by subsequent designation (CARLGREN, 1949: 103).

Sagartiidae with well developed pedal disc. Column smooth, with cinclides, which are sometimes indicated by small elevations. Margin distinct. Sphincter strong, mesogloeal, wholly separated from the endodermal muscles of the column. Tentacles numerous, rather short, the inner considerably longer than the outer, hexamerously arranged. Longitudinal muscles of tentacles and radial muscles of oral disc ectodermal. Oral disc broad. Typically two siphonoglyphs and two pairs of directives. Mensenteries numerous, about the same in number as the tentacles. At least the first cycle of mesenteries sterile. Retractors of the mesenteries diffuse, band-like. Parietobasilar muscles, weak, basilar muscles distinct. Acontia numerous, long. Cnidae: spirocysts, anisorhize haplonemes, b-rhabdoids, p-rhabdoids A, p-rhabdoids B1a, p-rhabdoids B2a.

Distribution. Coasts of Southern Africa, Namibia, Brazil, Argentina, Chile, Australia and New Zealand.

Anthothoe chilensis (Lesson, 1830)

(Figs. 1-8)

Actinia chilensis LESSON, 1830: 76, pl.2, fig. 5. Type locality: Quiriquine Island (type not designated nor found).
Cereus stimpsoni VERRILL, 1870: 53-54. Type locality: False-Bay, Cape of Good Hope, South Africa (type not designated). **Syn. n.**
Sagartia chilensis; MC MURRICH, 1904: 265-267, pl. 17, figs. 48-52.
Thoe chilensis; CARLGREN, 1927: 75-77.
Parathoe stimpsoni; CARLGREN, 1928: 233-236, figs. 66-67.
Anthothoe stimpsoni; CARLGREN, 1938: 86-89, fig. 41; 1941: 8-9, pl. 2, fig. 1; 1942: 16-17, fig. 14.
Actinothoe chilensis; CARLGREN, 1949: 103.
Anthothoe chilensis; CARLGREN, 1959: 32-33; CARTER, 1965: 136-138, pl. I, figs. 3-4.

Diagnosis. Smooth column, without divisions, with alternating coloured longitudinal stripes. Cinclides inconspicuous, tentacles numerous, up to 260 and 30 pairs of perfect mesenteries in larger specimens, and 5 cycles of mesenteries. Gonochoric, third order is fertile.

External morphology. Pedal disc: well developed, adherent, broader than column; circular in outline, but usually elongated before the asexual process of longitudinal fission. Orange-coloured mesenterial insertions always visible (corresponding to 190). Ground colour pink translucent and may be radially furrowed along mesenterial insertions. Diameter 8 - 19 mm in life, and 5 - 18 mm in preserved specimens.

Column (fig. 1): smooth, without divisions; short, broader than high; diameter slightly smaller than pedal and oral disc in relaxed specimens. Margin and limbus distinct, without fossa. Colour pattern: alternating longitudinal stripes orange (number 174, or 190, 196 or 199, light to more distinct) and green - blue (or grey - blue light) (430, 443 or 450), or alternating longitudinal stripes white and grey - blue light. Grey - coloured mesenterial insertions (339, 340 or 233). Regenerative area distinct on one side of specimens, with smaller and fewer tentacles. Cinclides arrayed longitudinally along both endocoels and exocoels, inconspicuous, usually two per row, at mid - scapus; the anemone extrude up to three acontia per cinclis. Column length 2 - 15 mm in preserved specimens.

Oral disc: translucent, with many white stripes; broader than column in relaxed individuals. Pigmentation brown-transparent along endocoels of primary cycle and directives, ground color orange (337 or 338); endocoels of second and third cycles white to orange (199). Brown (hazel) pigmentation stripes along mesenterial attachments. Red (156) pigmentation at bases of highest cycle of tentacles. Diameter 6 - 20 mm. Small mouth, slot - like (groove - like), not prominent, white lips.

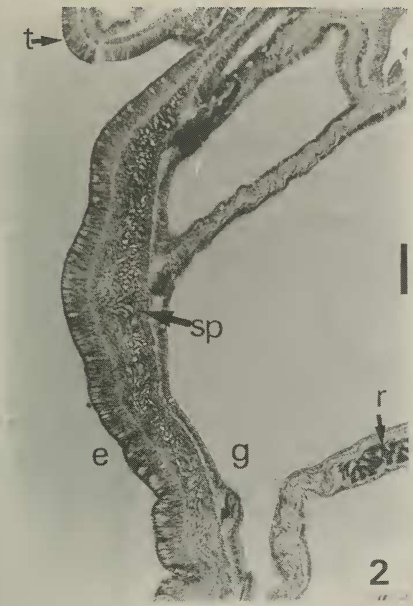
Tentacles: smooth, conical, tip pointed; contractile and retractile; numerous, up to 200 (an individual with 258). In 5 cycles, internal tentacles longer than external; the last cycle, marginal and endocoelics, considerably smaller than the others; rarely bifurcated. The formula is 12 + 12 + 24 + 48 + ?. White (with tips orange - coloured 249 or grey), orange (190 or 199) or orange - grey (234); pigmentation grey proximally, as well as at the oral disc.

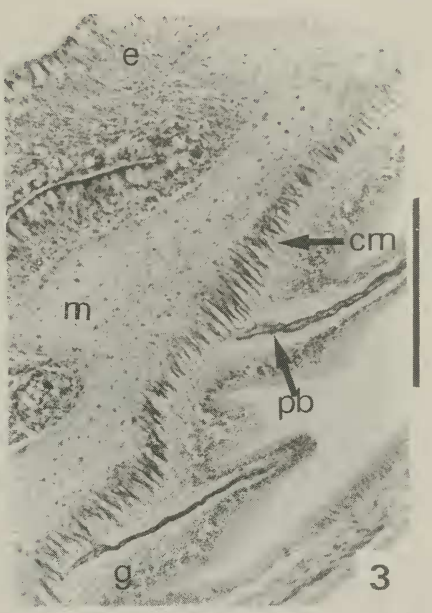
Internal anatomy. Mesogloeal sphincter strong, situated just below the marginal tentacles, occupying in its upper part almost the whole mesogloea, separated by a thin band of mesogloea of the endodermal circular musculature (fig. 2), which is well developed. Weak parietobasilar (fig. 3, pb) and basilar muscles (fig. 5, bm). The mesogloea (figs. 3, 5, m) extremely rich in cells; it was imperfectly stained with Mallory's Triple Stain because the numerous nuclei, better stained by Gomori Stain.

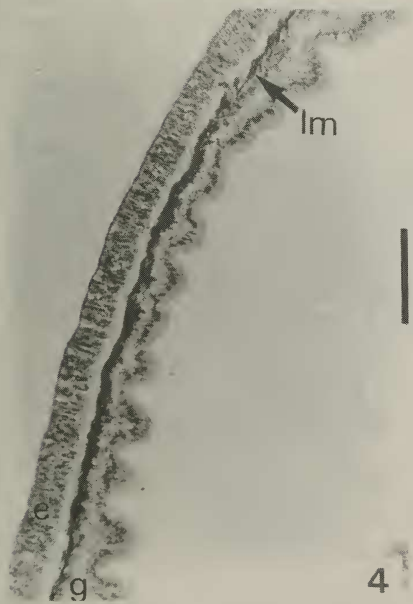
Actinopharynx: short, provided with numerous very conspicuous longitudinal furrows and ridges; one to three siphonoglyphs, usually two attach to same number of directive pairs.

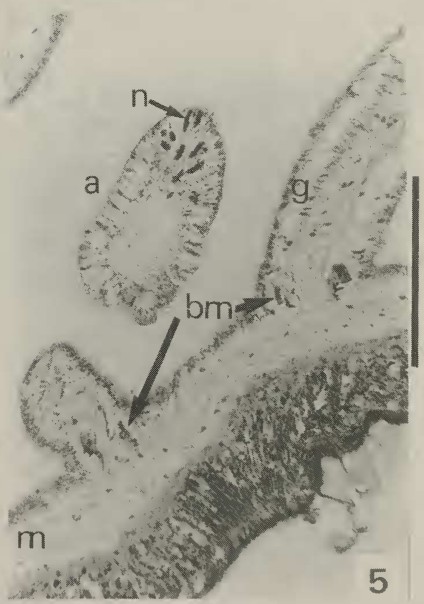
Tentacles with well developed ectodermic longitudinal musculature (fig. 4, 1 m). The ectoderm extremely rich in nematocysts, and the endoderm distinct.

Fig. 1. *Anthothoe chilensis*(Lesson, 1830) from Mar del Plata (Escollera Norte), live specimens; with striped column, dilated pedal disc and numerous tentacles. 3.5 X.

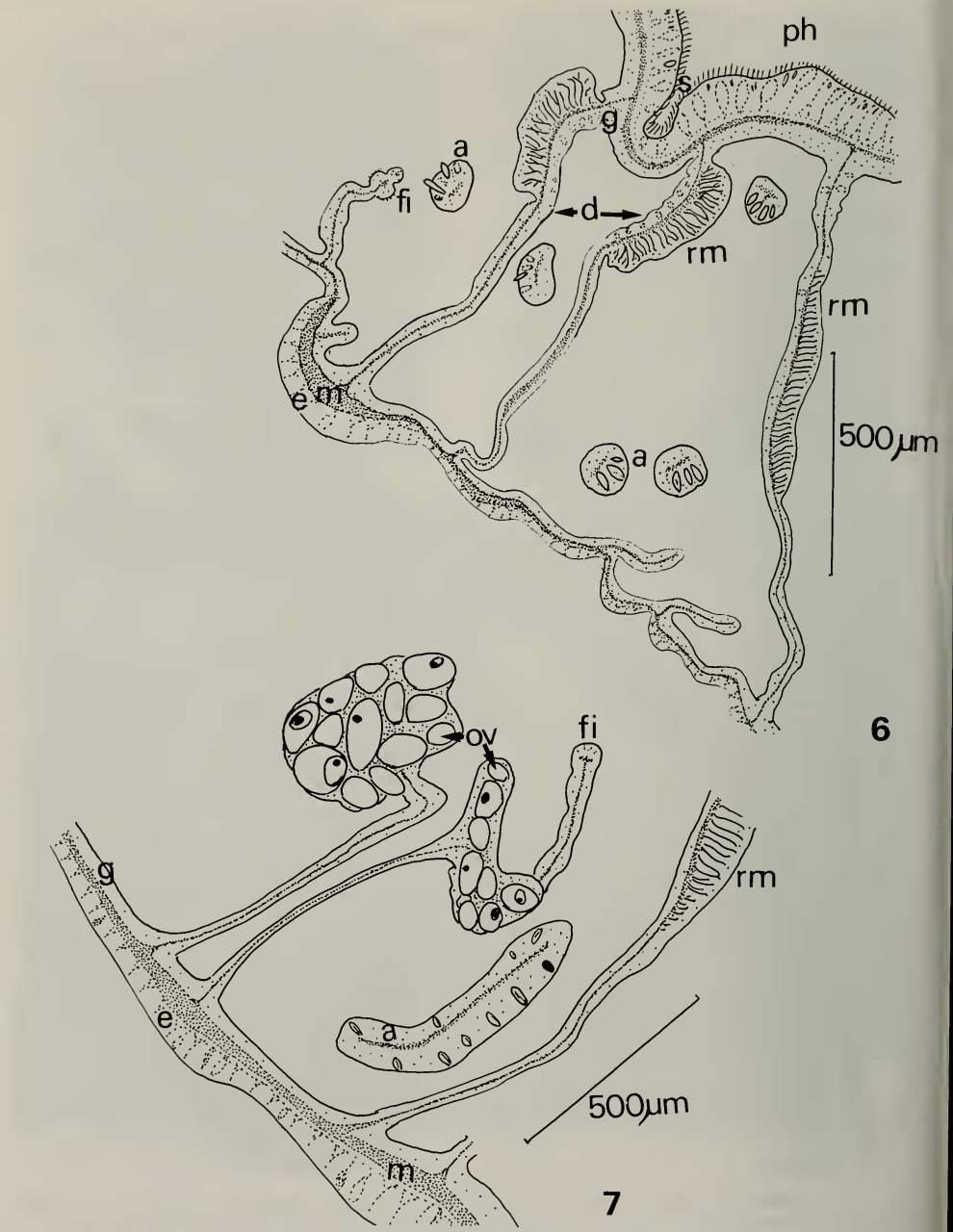








Figs. 2-5. *Anthothoe chilensis*, longitudinal sections: 2, through mesogloeal sphincter; 3, circular endodermal musculature; 4, through tentacle; 5, through basal disc, showing basilar musculature. (a, Acontia; bm, basilar muscles; cm, circular muscles; e, epidermis; g, gastrodermis; lm, longitudinal ectodermic muscles; m, mesogloea; n, nematocysts; pb, parieto basilar muscles; r, part of a retractor muscle; sp, sphincter muscle; t, part of a tentacle). Bar = 100 μm.



Figs. 6-7. *Anthothoe chilensis*, cross sections: 6, pharynx, a directive pair and a 2nd order mesenteries; 7, oocytes situated into imperfect mesenteries. (a, acontia; d, directives; e, epidermis; fi, filaments; g, gastrodermis; m, mesogloea; ov, oocytes; ph, pharynx; rm, retractor muscles; s, siphonoglyph). Bar= 500 µm

Table I. Comparison between the cnidom of specimens of *A. chilensis* from Rio de Janeiro; Mar del Plata, and those from Chile (after CARLGREN, 1959) and South Africa (after CARLGREN, 1938, as *A. stimpsoni*). pred, predominant; com, comon; * not found in individuals from 45 m deep; r and c, rare in individuals from Brazil, common in individuals from Argentina, respectively.

Structure Cnidae	Rio de Janeiro (23ºS, 43ºW) size (µm)	n	N	Abund.	Mar del Plata (38º05'S,57º32'W) size (µm)	n	N
Tentacles							
spirocysts	17.6(9.4-25.7)x 2.9(1.9-5.1)	50	8/8	Pred	21.7(15.1-31.2)x 3.4(2.1-5.0)	130	7/7
p-rhabdoids B2a	20.6(16.0-28.5)x 3.8(2.0-6.0)	60	8/8	com	23.1(12.8-29.8)x 4.3(3.2-6.4)	110	7/7
b-rhabdoids	19.3(11.3-33.0)x 2.2(1.4-2.8)	70	8/8	com	21.9(14.8-29.7)x 2.5(2.1-3.2)	110	6/7
haplon.anisorr.	not found			rare	14.7(12.7-23.3)x 3.4(3.2-5.3)	50	5/7
Actinopharynx							
p-rhabdoids BlaI	12.3(8.6-16.4)x 3.6(2.5-5.1)	30	6/8	few	11.1(10.1-12.8)x 4.8(4.2-5.3)	30	6/7
p-rhabdoids BlaII	18.5(15.1-26.0)x 4.2(3.5-5.5)	30	8/8	pred	20.4(15.9-25.4)x 5.1(4.2-6.4)	70	7/7
p-rhabdoids BlaIII	21.7(18.9-27.1)x 4.6(4.4-5.0)	20	2/8	rare*	27.2(21.2-31.8)x 5.2(4.2-6.4)	20	5/7
p-rhabdoids B2a	18.5(15.7-22.2)x 2.9(2.5-4.3)	20	3/8	r - c	20.5(17.0-25.4)x 4.6(3.2-6.4)	70	7/7
b-rhabdoids I	21.6(15.7-29.6)x 2.1(1.3-2.9)	30	7/8	com	25.9(19.1-34.1)x 3.0(2.1-3.2)	130	7/7
b-rhabdoids II	14.2(12.0-18.3)x 2.0(1.9-2,5)	30	5/8	rare*	16.6(12.7-19.1)x 2.0(1.6-2.1)	25	4/7
b-rhabdoids III	13.4(10.3-15.7)x 1.4(1.1-1.9)	30	5/8	rare	12.5(8.5-14.8)x 2.0(1.6-2.1)	30	5/7
p-rhabdoids A	22.0(19.5-23.9)x 2.8(2.5-3.1)	20	2/8	r*- c	26.5(23.3-31.8)x 4.1(3.2-5.3)	60	5/7
Column							
p-rhabdoids B2a	15.8(12.6-25.6)x 3.2(2.5-4.0)	40	8/8	pred	18.7(14.8-23.3)x 3.9(3.2-5.3)	120	7/7
b-rhabdoids I	10.4(5.7-12.8)x 1.3(1.0-2.1)	20	4/8	r - c	12.2(8.5-14.8)x 2.3(1.6-3.2)	110	7/7
b-rhabdoids II	not found			rare	19.7(14.8-23.3)x 3.2	30	3/7
haplon. anisorr.	17.0(14.2-21.6)x 3.9(2.8-4.6)	30	7/8	com	16.6(12.7-21.2)x 3.4(3.2-4.2)	70	7/7
Acontia							
p-rhabdoids B2a	59.9(32.8-74.4)x 6.4(3.8-10.0)	100	8/8	pred	68.0(33.6-81.0)x 6.7(3.2-8.0)	190	7/7
b-rhabdoids	26.5(21.4-34.8)x 2.0(1.5-2.8)	60	8/8	com	28.7(17.0-38.0)x 2.2(1.6-3.0)	130	7/7
Filaments							
p-rhabdoids Bla I	9.3(8.2-11.4)x 3.5(2.5-5.0)	40	8/8	pred	10.8(8.5-12.7)x 5.1(4.2-6.4)	70	7/7
p-rhabdoids Bla II	15.6(12.6-22.8)x 4.1(3.1-6.0)	40	8/8	com	16.7(14.5-21.2)x 4.9(3.2-5.3)	70	7/7
p-rhabdoids B2a	21.7(16.4-31.0)x 3.5(2.5-5.0)	40	8/8	com	23.7(19.1-25.4)x 4.2(3.2-5.3)	60	7/7
b-rhabdoids I	15.8(9.6-22.0)x 1.9(1.3-3.0)	70	8/8	pred	16.8(9.9-25.4)x 2.0(1.1-3.1)	80	7/7
b-rhabdoids II	14.7(12.0-17.0)x 4.9(4.4-5.7)	20	1/8	rare*	not found		

Structure Cnidae	Chile(41º52'S73º50'W) size (µm)	South Africa(34º7'S18º38'W) size (µm)
Tentacles		
spirocysts		14.0-31.0x 1.5-4.0
p-rhabdoids B2a	15.0-26,8x 4.2	22.0-29.0x 3.5-4.5
b-rhabdoids	14.0-22.6x 2.8-3.5	14.0-20.0x 1.5-2.0
haplon.anisorr.		19.0-26.0x 2.0-2.5
Actinopharynx		
p-rhabdoids BlaII	15.5-26.4x 4.2-5.6	22.0-29.0x 3.5-5.0
b-rhabdoids I	24.0-28.2x 3.0-3.5	25.0-34.0x 2.0-3.0
Column		
p-rhabdoids B2a	12.7-21.0x 3.5-9.5	12.0-19.0x 3.0-4.5
b-rhabdoids I		10.0-14.0x 2.0
Acontia		
p-rhabdoids B2a	43.7-78.3x 5.6-8.2	43.0-91.0x 5.5-9.0
b-rhabdoids	21.0-33.8x 2.5-3.0	24.0-35.0x 1.5-2.5
Filaments		
p-rhabdoids Bla I	8.0-15.5x 4.2-5.6a	10.0-26.0x 4.0-5.5
b-rhabdoids I	10.0-19.7x 2.2-2.8	15.5-19.0x 2.0

Mesenteries: numerous perfect mesenteries (up to 30 pairs); often irregularly arrayed due to asexual reproduction; up to five cycles, three cycles are perfect (fig. 6); third order is fertile, but the gonad is inconspicuous (fig. 7, ov). About the same number of mesenteries distally and proximally; retractors of stronger mesenteries (fig. 6, 7, rm) diffuse, band - like, seemingly more strongly developed on the first order; the directives with more restricted muscles. Highest - order mesenteries lack developed retractors and sometimes may lack filaments, but all others have them. Acontia white, emitted by the cinclides or mouth very soon when the individual is disturbed.

Cnidae (fig. 8): spirocysts, anisorhize haplonemes, b-rhabdoids, p-rhabdoids A, p-rhabdoids B1a, p-rhabdoids B2a. The type and size-ranges of cnidae measured in specimens of *A. chilensis* from Rio de Janeiro and Mar del Plata are nearly similar (tab. I). Nematocyst differences are confined to three types found only in specimens from one of localities; these cnidae were b-rhabdoids II in the column and anisorhize haplonemes in tentacles in Argentine specimens (fig. 8, o and d, respectively) and finally, b-rhabdoids in filaments (fig. 8, w), found only in Brazilian subtidal specimens. However, these nematocysts have been found sparsely, so the differences would seem so small as to indicate that only one taxon is involved. Cnidae sizes and distribution in *A. chilensis* and *A. stimpsoni* provided by CARLGREN (1938, 1959) agree with cnidae data of studied specimens (tab. I). Also the cnidae of a sample of *A. stimpsoni* (provided by the South African Museum) were compared and they were coincident.

Habitat and bioecological observations. According to SEBENS & PAINE (1978), *A. chilensis* is infralittoral but also occupies the low intertidal; the brazilian specimens were found up to 45 meters deep. Frequently this species occurs in rock crevices, below boulders, as well as in protected sites of walls of shaded pools. The species was found attached, generally forming small groups, more frequently on rocks, but also epibiotic of the sponge *Hymeniacidon sanguinea* Grant, 1827 and *Halichondria cristata* Sará, 1978, the mytilid *Brachydontes rodriguezi* d'Orbigny, 1846, and the barnacle *Balanus* sp. They feed on zooplankton, forming clones by asexual reproduction (longitudinal fission).

Distribution. Southeast Pacific Ocean (North and Central Chile: CARLGREN, 1959; CARTER, 1965; SEBENS & PAINE, 1978). Indic Ocean (Southern Africa: CARLGREN, 1938), South Atlantic Ocean (Namibia and Southern Africa: CARLGREN, 1938, 1939; St. Helena Island: CARLGREN, 1942; Rio de Janeiro, Brazil, and Mar del Plata, Argentina).

Material examined. BRAZIL. **Rio de Janeiro:** Arraial do Cabo, Praia Grande (intertidal), (3), 20.XII.80, M.J.C. Belém & D.C. Monteiro col., (MNRJ 241-243); (9), 19.II.81, M.J.C. Belém & D.C. Monteiro col., (MNRJ 244); (3), 19.II.81, M.J.C. Belém & D.C. Monteiro col., (MNRJ 245-247). (all, series n. 140 of microscope slides of MNRJ). Arraial do Cabo (subtidal), 45 m, (35), 10.VI.86, F.C. Fernandes col., MNRJ 1050; Rio de Janeiro, Praia Vermelha, (2), 2. XI.83, D.C. Monteiro col. (Slides Collection MNRJ, serie n. 760). ARGENTINA. **Mar del Plata:** Santa Elena del Mar, (3), 21.XII.87, A.C.Excoffon col., UNMP 17.1; Cabo Corrientes, (2), 24.III.93, G.N. Genzano col., UNMP 17.2; Playa Chica, (11), 7.XII.87, A.C. Excoffon col., UNMP 17.3; Escollera Norte, (7), 17.XII.87, G.N. Genzano & A.C. Excoffon col., UNMP 17.4; Escollera Norte, (8), 29.XI.90, G.N. Genzano & A.C. Excoffon col.,

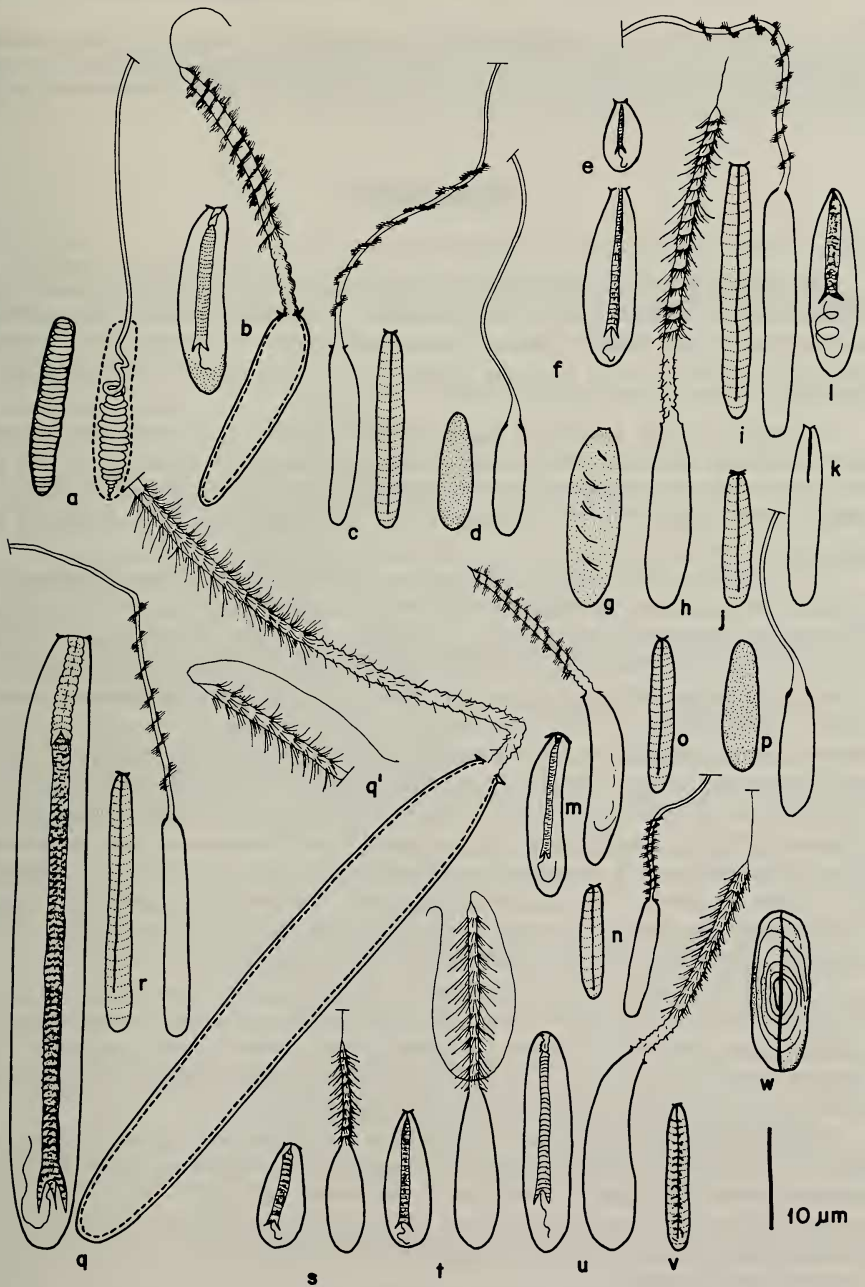


Fig. 8. *Anthothoe chilensis*, nematocyst signature. a-d: tentacles; e-l: actinopharynx; m-p: column; q-r: acontria; s-w: filaments. a: Spirocysts; b, h, m, q, u: p-rhabdois B2a; c, i, j, k, n, o, r, v, w: b-rhabdoids; d, p: haploneme anisorrize; e, f, g, s, t: p-rhabdoids B1a; 1: p-rhabdoids A.

UNMP 17.5; Punta Cantera, (11), 26.II.87, UNMP 17.6; (22), 26.III.87, UNMP 17.7; (12), 25.XI.87, UNMP 17.8; (9), 13.XII.88, UNMP 17.9; (14), 14.IV.89, UNMP 17.10; (26), 18.X.89, UNMP 17.11; (14), 29.VIII.90, UNMP 17.12; (17), 3.XII.90, UNMP 17.13; UNMP 17.6 to 17.13, A.C. Excoffon, col. SOUTH AFRICA, Scharpen Island, Langebran, (1), 30.IV.61, SAM-H 1522.

DISCUSSION

Sagartiidae has been defined as an uncertain taxonomic group, presenting difficulties for those who study it (RIEMANN - ZÜRNECK, 1975). Considering the descriptions, the status of many species are doubtful; since this is valid for some type species, even certain genera are questionable (RIEMANN - ZÜRNECK, 1975; ENGLAND, 1987).

According to the survey of CARLGREN (1949), this family has acontia with microbasic amastigophores and basitrichs; however amastigophores are actually microsbasic mastigophores (or p-rhabdoids B2a, SCHMIDT, 1969), as has been demonstrate by CUTRESS (1955). SCHMIDT (1972) redefined the family and included it in the group of "Late Mesomyaria".

In the Southern Hemisphere, *Anthothoe chilensis* from Chile and *A. stimpsoni* from South Africa were recorded. The samples found on the coasts of Argentina and Brazil are morphologically similar to both species. The descriptions provided by MC MURRICH (1904), CARLGREN (1927, 1938, 1942) and CARTER (1965) are very coincident and do not present characteristics truly different for both species. CARLGREN (1938) mentioned a greater number of tentacles for *A. stimpsoni*, and explained the size's variation in the samples by referring "those found deeper are larger"; therefore the size cannot be considered conclusive to distinguish these species. Colour is also variable, but CARLGREN (1938) mentioned different tonalities in *A. stimpsoni*. The differences in the cnidae are not very great between *A. stimpsoni* and *A. chilensis* (tab. I). Therefore *A. chilensis* and *A. stimpsoni* must be considered synonyms. The species occuping the coasts of Chile, Argentina, Brazil and South Africa is *Anthothoe chilensis* (Lesson, 1830); *A. stimpsoni* (Verrill, 1870) is considered its junior subjective synonym.

ENGLAND (1991) advised that some distinctions (such as the presence of a "Faltstück" or not) will allow the cnidae of a number of anemone species to be described more precisely. Then, in acontiarian anemones belonging to the Haliplanellidae (PIRES, 1988; EXCOFFON & ZAMPONI, 1993) and Sagartiidae families it is convenient to use SCHMIDT's terminology.

Taking into account the present study, it would be convenient to make an exhaustive evaluation of the following species from Australia and New Zealand, mentioned by CARLGREN (1950 a, b, 1954) and PARRY (1951, 1952): *A. albocincta* (Hutton), *A. vagrans* (Stuckey, 1909) and *A. australiensis* Carlgren, 1950, to establish their validity and at the same time to determine if the genus *Anthothoe* is a monophyletic group.

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REFERENCES

CARLGREN, O. 1927. Actiniaria and Zoantharia. **Further zool. Results Swed. Antarct. Exped. 4. 1901-1903**, Stockholm, **2**(3): 1-102.

__. 1928. Actiniaria der Deutschen Tiefsee - Expedition Wiss Ergebn. **Deuts. Tiefsee - Exped., "Valdivia" 1898 - 1899**, Jena, **22**(4): 125-266.

__. 1938. South African Actiniaria and Zoantharia. **K. svenska Vetensk Akad. Handl**. Uppsala & Stockholm, **17**(3): 3 - 148.

__. 1939. Actiniaria and Zoantharia of the Scottish National Antarctic Expedition 1902-1904. **Trans. R. Soc. Edinb.**, Edinburgh, **59**(30): 791-803.

__. 1941. Corallimorpharia, Actiniaria and Zoantharia. **Den Norke Vidensk. Akad**. Oslo, (8): 1-12.

__. 1942. The Actiniaria and Zoantharia of St. Helena. Papers from Dr. Th. Mortensen's Pacific Expedition 1914-16.LXX, **Vidensk. Meddr. dansk naturh. Foren**, Kobenhavn, **105**: 1-20.

__. 1949. A survey of the Ptychodactiaria, Corallimorpharia and Actiniaria. **K. svenska. Vetensk Akad Handl.**, Uppsala & Stockholm, **1** (1):1-122.

__. 1950a. Corallimorpharia, Actiniaria and Zoantharia from New South Wales and South Queensland. **Ark. Zool.**, Uppsala, **1**(10): 131-146.

__. 1950b. Actiniaria and Zooantharia from South Australia. **K. fysiogr. Sällsk. Lund. Förh.**, Lund, **20** (10):1-15.

__. 1950c. Actiniaria and Corallimorpharia. Great Barrier Reef Expedition 1928-29. **British Mus. (Nat. Hist.) Scient. Reports**, London, **5**(7): 427-457.

__. 1951. The Actinian fauna of the Gulf of California. **Proc. U.S. natn. Mus.**, Washington, **101**(3282): 415-419.

__. 1954. Actiniaria and Zoantharia from South and West Australia with comments upon some Actiniaria from New Zealand. **Ark. Zool.**, Uppsala, **6**(34): 571-595.

__. 1959. Corallimorpharia and Actiniaria with description of a new genus and species from Peru. **Lunds Univ. Arsskrift.** Lund, (2), **56**(6): 1-39.

CARTER, D. 1965. Actinias de Montemar, Valparaíso. **Revta Biol. Mar.**, Valparaíso, **12**(1-3): 129-159.

CUTRESS, C. 1955. An interpretation of the structure and distribution of cnidae in Anthozoa. **Syst. Zool.**, Washington, **4**(3): 120-137.

DUNN, D. F. 1963. Some Antarctic and Subantarctic sea anemones (Coelenterata: Ptychodactiaria and Actiniaria). **In:** KORNICKER, L.S. ed. **Biology of the Antarctic Seas XIV**, Ant. Res. Ser., **39**: 1-67.

ENGLAND, K.W. 1987. Certain Actiniaria (Cnidaria, Anthozoa) from the Red Sea and tropical Indo-Pacific Ocean. **Bull. Br. Mus. nat. Hist.**, London, **53**(4): 205-292.

__. 1991. Nematocysts of sea anemones (Actiniaria, Ceriantharia and Corallimorpharia: Cnidaria): nomenclature. **Hydrobiologia**, Dordrecht, **216/217**: 691-697.

EXCOFFON, A.C. & ZAMPONI, M.O. 1993. Anémonas de Mar del Plata y localidades vecinas. IV. *Tricnidactis errans* Pires, 1988 (Actiniaria, Haliplanellidae). **Iheringia**, Sér. Zool., Porto Alegre, (75): 47-53.

LESSON, R. P. 1830. Zoophytes. **In**: ESSON & GAROT. **Voyage autour du Monde sur la Corvette S.M. la Coquille pendant lles années 1822-25.** Paris, Zool. 2. Part 2. Div. 2.

MC MURRICH, J. P. 1904. The Actiniae of the Plate Collection. **Zool. Jahrb. Syst. Suppl. 6. Fauna Chil.**, Jena, **3** (2): 215-306.

PANTIN, C. F. A. 1948. **Notes on microscopical Tecnique for Zoologists**. Cambridge, Cambridge Univ. 77 p.

PARRY, G. 1951. The Actiniaria of New Zealand. **Rec. Canterbury Mus.**, Christchurch, **6**: 83-119.

__. 1952. The Actiniaria of New Zealand. Part II. **Rec. Canterbury Mus.** Christchurch, **6**:121-141.

PIRES, D.O. 1988. *Tricnidactis errans* n. gen., n. sp. (Cnidaria: Actiniaria, Haliplanellidae) from Guanabara

Bay, Rio de Janeiro, Brazil. **Revta bras. Biol.**, Rio de Janeiro, **48**(3):507-516.
RIEMANN-ZÜRNECK, K. 1975. Actiniaria des Südwestatlantik. II. Sagartiidae und Metridiidae. **Helgoländer wiss. Meeresunters**, Hamburg, **27**: 70-95.
SCHIMIDT, H. 1969. Die Nesselkapseln der Aktinien und ihre differential - diagnostische Bedeutung. **Helgoländer wiss Meeresunters**, Hamburg, **19**(2):284-313.
__. 1972. Prodromus zu einer monographie der mediterranen Aktinien. **Zoologica**, Stuttgart, **121**: 1-146.
SEBENS, K.P. & PAINE, R. T. 1978. Biogeography of Anthozoans along the West Coast of South America: habitat, disturbance and prey availability. **Proc. Int. Symp. Mar. Biogeog. and Evol. of the South Hemisphere**, Auckland, **1**:219-237.
SÈGUY, E. 1936. **Code Universal des Couleurs**. Paris , P. Lechevalier. 68p.
VERRILL. A.E. 1870. Synopsis of the polyps and corals of the North Pacific Exploring expedition. 1853-1856. **Proc. Comm. Essex Inst.**, Essex, **6**(1):51-103.

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